CHAPTER 6
RECOMMENDATIONS

The thesis took Genetic Algorithm as an optimization approach to develop evolutionary game playing programs for board games Checkers and Reversi. These both board games was having board size of 8x8 and was type two-player, zero-sum, deterministic, alternate move and perfect information games. Genetic string representing board position was conceived to develop game playing programs. It gave very stimulating and game play enriching results. The results represent truly machine learning enhancement by better game tree exploration and move selection optimization for both board games.

Genetic results definitely improve fitness values and fitness chart depicted in chapter 4 proves the positive impact of genetic operators on to board game position based move improvement. These results also reveal betterment in move making as the generations progresses.

There are time constraints with genetic optimization approach and game tree search was conducted to a limited depth. Increasing population size and generation numbers definitely increases program performance but does makes the program execution sluggish.

Following are the points for future direction of work:

- The board game search process can be enhanced to more ply depth to improvise search depth which can give better and more searched move choices and move selection.
- Game generation and move databases can be formed by recording all moves. These databases can be incorporated to make move decisions more efficiently and effectively in game play program which can give near optimal solution in very limited time.
The Board game can also be implemented also for the category of “Computer v/s Computer” this feature will definitely help to derive better Evaluation function based results in shorter time span. So many parameters like Program Efficiency, portability and Function Improvement can be introduced and improved.

Both the board games may be considered as a three-color game in which the empty squares represent the third "color". The patterns of empty squares are nearly as important as patterns of the "normal" colors. The current version of the programs attends to this problem by simply "ignoring" the squares that are empty.

Hybrid system can be developed to improve Evaluation function based game playing program by including Neural network or Fuzzy logic based hybrid system where some machine learning and improvement can also be implemented.

The genetic optimization can be improvised further by devising better fitness function drafting techniques in order to calculate the board state fitness more precisely and make noteworthy progress to improvise the computer board games.

Other such board games playing program can be developed using same genetic string based function value optimization.

The genetic approach can employ other search techniques to refine evaluation function like ProbCut or Marker Based approach.